

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number
WO 2005/049812 A1

(51) International Patent Classification⁷: C12N 5/08

(74) Agent: **BLAKE DAWSON WALDRON PATENT SERVICES**; Level 39, 101 Collins Street, MELBOURNE, Victoria 3000 (AU).

(21) International Application Number:
PCT/AU2004/001593

(22) International Filing Date:
19 November 2004 (19.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/523,249 19 November 2003 (19.11.2003) US

(71) Applicant (for all designated States except US): **AUSTRALIAN STEM CELL CENTRE LIMITED** [AU/AU]; Ground Floor, Building 75 (STRIP), Monash University, CLAYTON, Victoria 3800 (AU).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **STANLEY, Edouard, Guy** [AU/AU]; 20 Mascoma Street, ASCOT VALE, Victoria 3032 (AU). **ELEFANTY, Andrew, George** [AU/AU]; 8 Arundel Crescent, SURREY HILLS, Victoria 3127 (AU). **STADLER, Elizabeth, Siewsun** [AU/AU]; 8 Arundel Crescent, SURREY HILLS, Victoria 3127 (AU). **LIVESEY, Stephen, Anthony** [AU/AU]; 74 Nirvana Avenue, MALVERN EAST, Victoria 3145 (AU).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **METHODS FOR PRODUCING BLOOD PRODUCTS FROM PLURIPOTENT CELLS IN CELL CULTURE**

(57) Abstract: The present invention provides methods for in vitro production of clinically useful quantities of differentiated human blood cells. In various embodiments of the present invention, immortal pluripotent cells are used to produce differentiated blood cell populations using a cell production device. In a specific embodiment, the device is a sequential series of bioreactors utilizing growth media containing specific combinations of maintenance-, proliferation- or differentiation-promoting factors that maintain, expand and promote the maturation and differentiation of the desired cell types. The immortal pluripotent cells can optionally be genetically modified so as to remove histocompatibility or blood group antigens.

WO 2005/049812 A1